

WHAT IS CLAIMED IS:

1. A system for simulating a flexographic printing process based on user-controlled process parameters, the system comprising:

a set of data bases comprising a formal model of flexographic printing process variables, ranges of potential process variable values, potential interactions between process variables, and effects of the potential interactions on a printing process output;

a simulator program comprising a dynamic model of the printing process; and  
a user interface for providing user control of the simulator program.

2. The system of claim 1, wherein the user interface simulates a pressroom, including printing and control systems in the pressroom.

3. The system of claim 1, further comprising a copy desk for reproducing the printing process output.

4. The system of claim 3, wherein the copy desk comprises a set of software routines for performing image manipulations in order to reproduce printed effects on the process output, including changes in size of dots, dot density, modifications to a substrate surface.

5. The system of claim 4, wherein the copy desk further comprises printer's diagnostic tools such as a densitometer, a magnifier, and a spectrophotometer.

6. The system of claim 1, further comprising a trainer module for allowing a user to specify sets of materials to be used in the printing process.

7. The system of claim 6, wherein the user can define production costs applied in the simulator.

8. The system of claim 6, wherein the user can create problem sets which become a curriculum of a training course.

9. The system of claim 1, further comprising a copy generator module that allows users to enter images as simulated production jobs.

10. The system of claim 9, wherein the copy generator module that analyzes an image and pre-calculates how certain process faults would look if they were to appear on the image.

11. The system of claim 1, further comprising a diagnostic help system module for presenting the databases to help users troubleshoot print problems.

12. The system of claim 1, wherein the user interface lets a user verify and act on press and process parameters, the actions and verifications being communicated to the simulator.

13. A method of simulating a flexographic printing process based on user-controlled process parameters, the method comprising the steps of:

creating a database containing a formal model of a flexographic printing process;

providing a computerized workstation for accessing the database, accepting input from a user by way of a user interface, and displaying data related to process simulation;

processing data entered on the workstation using the formal model to  
generate simulation data; and  
10 displaying the simulation data.

14. The method of claim 13, further comprising the step of generating trace  
files of the process steps.

15. The method of claim 13, further comprising the step of providing user-  
definable multimedia links to data outside the database.

16. The method of claim 13, wherein the user interface comprises an press  
console.

17. The method of claim 13, further comprising the step of providing image  
manipulation screens to the user, including manipulations to “dot” size, density, and  
substrate surface.

18. The method of claim 13, further comprising the step of simulating printer  
diagnostic tools, including densitometers, magnifiers, and spectrophotometers.

19. The method of claim 13, further comprising providing a trainer module  
for specifying sets of materials and reference values to be used for production runs.

20. The method of claim 13, further comprising calculating production costs.

21. The method of claim 13, further comprising providing a copy generator  
module into which an image is entered and the image is analyzed to anticipate

potential production faults.

22. A system for simulating a printing operation comprising:
- a database for storing parameters relating to printing operations;
  - a formal model for relating input data to the database;
  - a user input for interactively eliciting input data from a user;
  - a simulating system for producing simulated printing output data based on the formal model; and
  - a display for presenting the output data to the user.